Catalogue of American Amphibians and Reptiles.

MARTOF, BERNARD S. 1968. *Ambystoma cingulatum.*

Ambystoma cingulatum (Cope)
Flatwoods salamander

Amblystoma cingulatum Cope, 1867:205. Type-locality, "Grahamville [Jasper County], South Carolina." Type specimen, collected by "Bailey," U. S. Natl. Mus. 3786, lost. Date of collection and sex unknown. Cope (1889:455) erroneously listed 3786 as having come from Abbeville, South Carolina. Neotype, designated by Goin (1950:308), U. S. Natl. Mus. 129396, "adult female collected at Robertsville, Jasper County, South Carolina, Nov. 17, 1947, by Wilfred T. Neill."

Amblystoma lepturum Cope, 1886:524. Type-locality unknown, designated as Jasper County, South Carolina by Schmidt (1953:18). Holotype, U. S. Natl. Mus. 14583. Junior synonym of *A. cingulatum* Cope 1867.

Linguaelapsus lepturus: Cope, 1889:116. New combination.

Chondrotus cingulatus: Cope, 1889:100. Transfer of *A. cingulatum* to a new genus, *Chondrotus*, Cope, 1887:88. Generic name a junior synonym of *Ambystoma* Tschudi, 1838 (Stejneger & Barbour, 1917:8).

Ambystoma cingulatus: Brimley, 1907:153. Spelling of generic and specific names modified.

Ambystoma cingulatum: Stejneger & Barbour, 1917:8. Emended spelling of specific name.

Ambystoma angulatum Wright, 1932:10. Apparently a typographical error, therefore an incorrect subsequent spelling lacking nomenclatorial status.

Ambystoma cingulatum cingulatum: Goin, 1950:307.

Ambystoma cingulatum bishopi Goin, 1950:300. Type-locality, "about 5 miles north of Pensacola, Escambia County, Florida." Holotype, Carnegie Mus. 29137, adult female, collected 7 May 1949 by Harvard E. Nygren.

Ambystoma (Linguaelapsus) cingulatum: Tihen, 1958. Use of *Linguaelapsus* Cope as subgenus of *Ambystoma.*

Linguaelapsus cingulatus: Freytag, 1959:88. New combination. See COMMENT.

• CONTENT. Two subspecies have been described but are not currently recognized (Martof and Gerhardt, 1965). See COMMENT.

• DIAGNOSIS. One of the smaller and lesser known ambystomatids, *A. cingulatum* is distinguished from *A. talpoideum* and *A. opacum* by having a slender body, small head, the lingual plicae divergent from a median furrow, and distinct body markings. It is most similar to *A. mabeei* but easily identified by the dorsal reticulated pattern, shorter toes, and multiple rows of vomerine teeth. In contrast, *A. mabeei* is often deep brown dorsally with light flecks most conspicuous along the sides of the body and has a black venter with few or no markings.

• DESCRIPTIONS. Adults attain an average total length of about 100 mm and a snout-vent length of 56 mm. The maximum measurements are 129 mm and 74 mm, respectively. The entire body has a blackish ground color. The sides and dorsum of about 75 per cent of the specimens have grayish markings which form a well-defined reticulate pattern, 20 per cent have poorly-defined reticulations, and 5 per cent completely lack reticulation (Martof & Gerhardt, 1965). Two per cent of the specimens have an annulated pattern. The venter is very dark with a variable pattern of numerous tiny flecks, ranging from a pattern composed of very distinct light spots to one with the light and dark pigments nearly balanced and distinct light spots lacking. Vomerine teeth are in 2 to 4 irregular rows and average 16 per side. Costal grooves range from 13 to 16, generally 15. Some osteological features are described by Tihen (1958). Males have a slightly enlarged cloacal region but sexual dimorphism is not pronounced in this species.

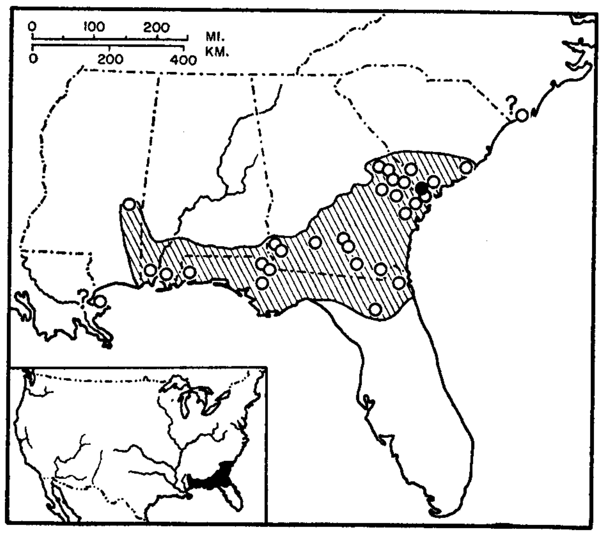
The larva is of the pond type (Noble, 1931; Valentine & Dennis, 1964), and "is an unusually beautiful and striking animal" (Mecham and Hellman, 1952). It is black with conspicuous light colored stripes: (1) a ventrolateral yellowish gold stripe from tip of snout to axilla, groin and base of tail; (2) a somewhat paler stripe over the dorsolateral part of the head and body to the distal half of the tail; and (3) a middorsal stripe, flesh colored and heavily suffused with dark pigment, from the head to the tip of the tail. Scattered flecks of gold occur over the mandible, base of gills, and dorsal part of limbs. The throat is unpigmented and the remainder of the venter is dusky. The larvae are easily distinguished from those of the sympatric *A. talpoideum* which have conspicuous longitudinal stripes on the venter. Traces of the larval pattern, especially the ventrolateral stripe, persist in newly transformed individuals. Metamorphosis occurs in March or April at a total length of 64 to 75 mm and a snout-vent length of 36 to 39 mm. Larvae from the Gulf Coastal Plain transform at a smaller size (Goin, 1950) and may be somewhat less colorful (Telford, 1954) than those from the Atlantic Coastal Plain. Neoteny is not known to occur.

• ILLUSTRATIONS. See Conant (1958:259), Carr & Goin 1955:198) and Bishop (1943:124) for photographs of living adults and Mecham & Hellman (1952:130) for that of a mature larva. Freytag (1959:85) presents a photograph of the dorsal view of a cleared adult skeleton. Excellent drawings of adults showing variation in markings are provided by Goin (1950:321). Line drawings of specimens with open mouths showing teeth and tongue are given by Goin (1950:304) and a comparison with *A. opacum* by Martof (1956:17). The early larva is compared with that of *A. talpoideum* by Orton (1942:171).

• DISTRIBUTION. The known range extends from the southern half of the coastal plain of South Carolina to the Okefinokee Swamp in Georgia and Florida, westward through the Florida panhandle, southern Georgia and Alabama (Chermock, 1952) to southeastern Mississippi. The specimen reported from New Orleans, Louisiana (Boulenger, 1882), is probably *A. texanum* (Goin, 1950). The record from extreme southeastern North Carolina (Schwartz and Etheridge, 1954) also needs corroboration. *Ambystoma cingulatum* inhabits flatwoods dominated chiefly by slash pine (*Pinus palustris*) and wire grass (*Aristida* sp.). Adults are often found beneath logs near shallow cypress ponds or swamps. These aquatic sites are the breeding and larval habitats.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Early information is summarized by Bishop (1943). The larvae are described in detail by Mecham & Hellman (1952) and by Telford (1954), the adults by Goin (1950) and by Martof & Gerhardt (1965). Carr (1940) and Goin (1950) best described the habitat and general ecology. Goin (1950) reported that spawning generally occurred before mid-February; females collected between November and January contained 33 to 127 large



MAP. The solid circle marks the type-locality, open circles all published localities. The shaded area is the presumed range. Question marks indicate localities needing corroboration.

pigmented eggs. Geographic variation is discussed by Goin (1950) and by Martof & Gerhardt (1965).

• REMARKS. More information on the life history and ecology of this species is needed. The reproductive behavior is unknown. The spermatophores, eggs and hatchlings have not been described. Only a few hundred specimens are available.

• ETYMOLOGY. The name *cingulatum* means having a *cingulum*, the Latin word for a belt or girdle or differentiated band (as of color). It pertains to the reticulated pattern on the dorsum of this species. The common name, flatwoods salamander, is that recommended by Conant *et al.* (1956) and refers to the chief habitat, pine flatwoods. Previously this species was known as the reticulated salamander (Bishop, 1943) and the frosted salamander (Goin, 1950).

COMMENT

Linguaelapsus Cope 1887:88 is generally considered a synonym of *Ambystoma*. Tihen (1958) recommended subgeneric rank for this taxon containing *cingulatum*, *mabeei*, *schmidti*, and *texanum*. Freytag (1959, 1962) recommended generic status for *Linguaelapsus*. On the basis of current information Tihen's arrangement seems to have more merit.

Specimens from the Gulf Coastal Plain do not differ significantly in bodily proportions from those from the Atlantic Coastal Plain. They tend to have fewer costal grooves and slightly lighter venters, and more of them have reticulated dorsal patterns; however, consistent, well-defined diagnostic characteristics are lacking. Geographic variation in size and bodily proportions is obscured by ontogenetic changes and by the small size of samples. All populations examined had many exceptional individuals and a wide range of variation. Subspecific designations are not warranted on the basis of specimens now available (Martof & Gerhardt, 1965).

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Published 8 July 1968 by the American Society of Ichthyologists and Herpetologists. Publication is supported by National Science Foundation grant G24231.

Primary editor for this account, James D. Anderson.